

VERMONT AGENCY OF TRANSPORTATION

**QUALIFIED CONCRETE
TECHNICIAN PROGRAM**



February 24, 2014

1.0 INTRODUCTION

Welcome to the Vermont Agency of Transportation, Material and Research Section Material Field Unit. This document is to help you learn what is required for concrete testing. This document has been developed to describe the training requirements necessary for Concrete Field Technician personnel to be considered “qualified” as referenced in the Agency’s Quality Assurance Program (QAP). This program has four distinct proficiency levels; trainee, apprentice, qualified, and certified technician. The immediate supervisor of the Agency personnel in the training program shall determine when the employee has satisfactorily met the requirements for each level. If you have already been trained in the HMA Section this will be a review of the same steps it took to be a qualified HMA technician only this time for concrete testing.

2.0 PERSONNEL PROFICIENCY LEVELS

Personnel shall display adequate proficiency to perform sampling and testing of appropriate aggregates.

2.1 TRAINEE

During this period, personnel would receive formal training including all applicable AASHTO and VTrans sampling and testing procedures with instruction on the importance of proper procedures and the significance of test results.

NOTE: As a Trainee if you learn better by writing things down and referencing them when it comes up again, please do, it will make it less stressful for both you and the one training you. You can also jot notes on the attached proficiencies if you find that more helpful.

The responsibilities of the trainee would be to...

1. ...read and understand applicable AASHTO, ASTM, and MRD (specific Agency tests) procedures.
 - a. Sampling of Aggregates (AASHTO T2)
 - b. Reducing Field Samples of Aggregate to testing size (AASHTO T248)
 - c. Total Evaporable Moisture Content of Aggregate by Drying (AASHTO T255)
 - d. Sieve Analysis of Fine and Coarse Aggregate (AASHTO T27)
 - e. Compressive strength of Cylindrical Concrete Specimens (AASHTO T22)
 - f. Mechanical Testing of Steel Products (Rebar testing AASHTO T244)
2. ...observe proper testing techniques of a qualified technician.
 - a. Field Testing
 - i. Sampling of Aggregates
 - ii. Reducing Field Sample
 - iii. Moisture Content
 - iv. Sieve Analysis
 - b. Laboratory Testing

- i. Breaking cylinders
 - ii. Breaking Rebar
- 3. ...learn calculations associated with the testing procedures.
 - a. Gradation sheets associated with sieve analysis
 - b. Batch forms associated with each truck that will leave the plant
(Examples of each are attached for your reference)
- 4. ...learn how to prepare appropriate paperwork.
 - a. Properly using Site Manager
 - b. Preparing Plant Reports for each project
 - c. Preparing Batch Slips for each truck
- 5. ...learn applicable computer programs associated with prompt and accurate testing and reporting.
 - a. Excel Macro Enabled Plant Report (remember when saving this program choose Macro Enabled excel or the Report will not work correctly)

Trainees may not be assigned acceptance sampling or testing without a Qualified Technician present.

2.2 APPRENTICE

Upon successfully communicating an understanding of all the Trainee requirements the employee can be considered an Apprentice, this can take anywhere from 1 week to 1 month depending on individuals learning abilities. Documentation of this training is the responsibility of the Trainee under the direct observation of the Trainer, it is then relayed to the Supervisor once critical training Targets have been met. During this period the employee would be given hands-on training with the opportunity to demonstrate proficiency of all assigned sampling & testing procedures. The Apprentice should be able to demonstrate proficiency in the following areas:

NOTE: As an Apprentice you will use everything you learned as a Trainee so bring out those notes that you took if you are having trouble remembering what to do next. DON'T PANIC your trainer is there to help you.

An Apprentice Technician is expected to...

- 1. ...perform applicable testing under the supervision of a Qualified Technician.
 - a. Field Testing
 - i. Sampling of Aggregates
 - ii. Reducing Field Sample
 - iii. Moisture Content
 - iv. Sieve Analysis
 - b. Laboratory Testing

- i. Breaking cylinders
 - ii. Breaking Rebar
2. ...demonstrate knowledge of mathematical calculations associated with testing procedures.
 - a. Gradation sheets associated with sieve analysis
 - b. Batch forms associated with each truck that will leave the plant
3. ...be able to answer questions pertaining to applicable test procedures including calculations.
 - a. Gradation sheets associated with sieve analysis
 - b. Batch forms associated with each truck that will leave the plant
4. ...prepare the appropriate paperwork for review by a Qualified Technician.
 - a. Properly using Site Manager
 - b. Preparing Plant Reports for each project
 - c. Preparing Batch Slips for each truck
5. ...demonstrate the ability to operate databases and complete test reports using established computer programs.
 - a. Excel Macro Enabled Plant Report (remember when saving this program choose Macro Enabled excel or the Report will not work correctly)
6. ...be able to calibrate test equipment under the instruction of a Qualified Technician.

Apprentices may be assigned acceptance sampling or testing responsibilities but must be under the supervision of a qualified technician while conducting these responsibilities.

2.3 QUALIFIED TECHNICIAN

For an Apprentice to become a Qualified Technician they must satisfactorily complete a Technician Proficiency for each of the various sampling and testing methods which they are expected to perform, see attached for examples of each test. The Technician Proficiency will be conducted by a Qualified Technician and will be documented in the employee's Training and Evaluation Record, see attached. Documentation of this record is the responsibility of the Trainee under the direct observation of the Trainer, it is then relayed to the Supervisor once critical training Targets have been met.

NOTE: As a Qualified Technician you may come across issues that didn't happen while you were supervised, DON'T PANIC, contact one of the Certified Technicians for advice on how to handle the issue. Most of the Certified Technicians have experienced every issue you will experience while out in the field.

As a Qualified Technician you will also be observed by Independent Assurance Technician. Again DON'T PANIC they are evaluating you on what you have already learned and are able to perform on your own. They will let you know when they will be observing your testing, when

they do allow extra time to perform these tests so you do not feel rushed to finish the testing on time.

A Qualified Technician is expected to...

1. ...perform testing procedures properly and independently with minimal supervision.
2. ...demonstrate an ability to select proper mathematical techniques and calculate basic probabilities.
3. ...to maintain diaries and records and to prepare clear effective reports.
4. ...to communicate effectively and able to translate technical material into layman's terms.
5. ...to coordinate work efforts with the general public, private contractors, and other federal, state and local Agencies.
6. ...to accurately report sampling and testing results and communicate them using Agency databases and computer programs.
7. ...maintain and review equipment calibrations necessary for a "Qualified Laboratory".

Qualified Technicians will be assigned sampling and testing responsibilities as outlined in the Agency's QAP.

2.4 CERTIFIED TECHNICIAN

Any person determined "certified" by an appropriate certification program, as determined by the Agency. The Northeast Transportation Technician Certification Program is one such program.

Certified Technicians will be assigned sampling and testing responsibilities as outlined in the QAP.

3.0 QUALIFICATION REQUIREMENTS

Re-certification is required every five years. Technician Proficiencies conducted by the Agency's Independent Assurance Program will be considered as a re-qualification for that particular test procedure.

A certified or qualified technician may lose their credentials for any of the following reasons:

1. Found to be falsifying test result records and/or reports or recommending acceptance of obviously defective material.

OR

2. Improper performance of sampling, testing or inspection responsibilities related to the assurance of the quality of material or workmanship.